

REMARKS

Claims 1, 3, 6-7, 13-14, 21, 24-28, and 32, have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,869,135, Vaeth et al.

The Examiner's Rejection is respectfully traversed.

The applicants' invention as claimed is directed to a one-step vapor deposition process such that the deposited coating comprises at least one interface containing chemical groups having sufficient intrinsic chemical reactivity to react with target molecules. The thickness of Applicants' coating is uniform throughout the entire film.

The claimed invention discloses the deposition of coatings that have defined functional groups with sufficient chemical reactivity to undergo chemical reactions subsequent to the deposition. The Applicants' coating is deposited and the chemical reaction that is claimed is after the CVD deposition. Additionally, in one aspect, the amenability to post-deposition reactions allows for anisotropic modification, if the post-deposition reactions is conducted in an anisotropic fashion, e.g. via printing techniques.

On the other hand, Vaeth '135 discloses "a system for selective deposition of polymers" via CVD polymerization. Thus, the deposited coating forms at a site of favorable nucleation. The disclosed polymer, specifically, poly(p-phenylene vinylene), has no intrinsic chemical reactivity to undergo subsequent chemical reaction, nor is it intended to in any way in this invention. They are commercial coatings that were found to deposit anisotropically on certain substrates.

In contrast, our invention does not disclose any kind of selective deposition. The method described results in polymer films that have a uniform thickness along the entire film.

Additionally, the polymer films must be chemically reactive and support chemical reactions at the surface of the coating subsequent to the chemical vapor deposition step. If the subsequent reaction step is conducted in an anisotropic manner, than the surface will have an anisotropic chemical and biological signature.

Although Vaeth et al.'135 have disclosed a chemical vapor deposition polymerization process, their approach is substantially different in at least two key aspects. First the polymers made by the technology proposed in the '135 reference results in polymers that have no functional groups to support further modification. While the idea in Vaeth et al. is to make inert, non-reactive coatings, the Applicants' invention is related to the preparation of reactive coatings that have sufficient chemical reactivity to undergo subsequent chemical modification reactions. The innovation in the process disclosed Vaeth et al '135 is that a modification of the substrate prior to chemical vapor deposition allows for formation of anisotropically distributed, non-reactive polymer films. And secondly, pre-treatment of a substrate prior to chemical vapor deposition is disclosed in the '135 to result in selective deposition of commercially available polymers, while in the Applicants' invention, a novel class of polymers is made by chemical vapor deposition that are unified in the property of sufficient chemical reactivity to allow for post-modification. If the post-modification is anisotropic, than this will result in a selectively modified substrate.

In other words, the Vaeth '135 reference discloses a method of CVD coating when the thickness of the coating depends on the locations of favorable nucleation. The thus formed coating will have various thicknesses and will be non-reactive to subsequent chemical modifications. Whereas, the Applicants CVS process forms a uniform thickness and does not

depend on favorable nucleation sites. Additionally, the thus formed coating is at least at some portions there of reactive to and support chemical reactions at the surface of the coating after the CVD step.

For example, with the Applicants' method a protein can be chemically bound to the polymer coating. This can be done everywhere or selectively at specific locations, for the case that the reaction of the protein with the surface is anisotropic. In the Vaeth '135 reference, a method is disclosed for selective deposition of a polymer by CVD. The polymers disclosed therein have no chemical reactivity and therefore cannot react with, for example, a protein.

In view of the foregoing, it is believed that the amended claims and the claims dependent there from are in proper form. The Applicants respectfully contend that Vaeth '135 does not anticipate the claimed invention under the provisions of 35 U.S.C. § 102(b). Thus, claims 1-32 are considered to be patentably distinguishable over the prior art of record.

In view of the foregoing comments, it is believed that the amended claims are in proper form and thus places the application into condition for allowance and an early indication of the same is respectfully requested.

Respectfully submitted,

  
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